

CLAIMS

1. A process for producing a flour enriched with cereal germ comprising the stages of:

5 a) separation of the germ oil from the cereal germ;

b) enrichment of the flour obtained from the milling of the cereals with the oil from step a), in order to give the flour enriched with cereal germ oil.

2. The process according to claim 1, wherein said stage
10 a) of the separation of the germ oil from the cereal germ comprises the stages of:

a₁) squeezing the cereal germ in order to give germ oil and a deoiled germ residue;

15 a₂) milling said deoiled germ residue in order to give germ flour.

3. The process according to claims 1 or 2 further comprising the stage of:

20 c) mixing the germ flour with the germ oil enriched flour and with the flour obtained from the milling of the cereals, to give cereal germ enriched flour.

4. The process according to any of the claims 1 to 3 wherein said squeezing of cereal germ (step a₁)), comprises a drying stage of the cereal germ, preferably
25 at a temperature between 30°C and 60°C.

5. The process according to claim 4, wherein said drying stage of the cereal germ is carried out at a temperature of about 30°C.

6. The process according to claim 5 wherein said drying stage is carried out in a rotating cylinder equipped with infrared ray lamps (2).

7. The process according to any of the claims 4 to 6, wherein said drying stage has a duration between 2 and 15 minutes.

8. The process according to claim 7, wherein said drying stage has a duration of about 3 minutes.

9. The process according to any of the claims 4 to 8 wherein, in said drying stage, the germ reaches a final temperature between 30°C and 60°C.

10. The process according to any of the claims 4 to 9 wherein, in said drying stage, the germ reaches a final temperature of about 33°C.

11. The process according to any of the claims 4 to 10 wherein the germ, upon emerging from said drying stage, has a humidity between 2% and 10%.

12. The process according to any of the claims 4 to 11 wherein the germ, upon emerging from said drying stage, has a humidity of about 8%.

13. The process according to any of the claims 2 to 12 wherein said squeezing of the cereal germ (step a₁),

comprises a pressing stage.

14. The process according to claim 13, wherein said pressing stage is carried out in a horizontal press (3).

15. The process according to claims 13 or 14 wherein
5 said pressing stage is carried out at a temperature between 70°C and 100°C.

16. The process according to any of the claims 13 to 15, wherein said pressing is carried out at a temperature between 90°C and 95°C, preferably about 91.5°C.

10 17. The process according to any of the claims 13 to 16 wherein, in said pressing stage, the germ oil is separated from the germ thus obtaining a deoiled germ residue.

18. The process according to claim 17 wherein said
15 deoiled germ residue is in an extruded form.

19. The process according to any of the claims 13 to 18 wherein, in said pressing stage, some of the germ oil impregnated processing wastes are additionally separated.

20. The process according to claim 19 wherein said oil
20 impregnated processing wastes are from 1% to 6% by weight of the total germ.

21. The process according to claim 20 wherein said oil impregnated processing wastes are about 3% by weight of the total germ.

25 22. The process according to any of the claims 13 to 21

wherein, in said pressing stage, the cereal germ passes into the press (3) within a time interval between 20 and 60 seconds.

23. The process according to claim 22 wherein, in said
5 pressing stage, the cereal germ passes into the press (3) within 30 seconds.

24. The process according to any of the claims 19 to 23 additionally comprising a pressing stage of said wastes for the recovery of germ oil.

10 25. The process, according to any of the claims 1 to 24, additionally comprising the filtration stage of the germ oil.

26. The process according to claim 25 wherein said germ oil filtration stage comprises the stage of combining the
15 oil obtained according to claim 17 with the oil obtained according to claim 24.

27. The process according to claims 25 or 26 wherein said oil filtration stage is carried out with a filter-press (8).

20 28. The process according to any of the claims 1 to 27 wherein said enrichment stage (step b)), comprises the stage of the combining of the cereal germ oil with the cereal flour.

29. The process according to any of the claims 1 to 28
25 wherein said germ oil is combined with said cereal flour

in a quantity between 3% and 20% by weight, preferably in a quantity of about 10% by weight.

30. The process, according to claim 28 wherein said combining stage of the germ oil with the flour is carried out in an atomiser (9) for the nebulisation of said germ oil.

31. The process according to any of the claims 2 to 30 wherein said milling stage of the deoiled germ residue, (step a₂)), comprises a crushing stage (4) of said deoiled germ residue.

32. The process according to claim 31 wherein said milling stage of the deoiled germ residue, (step a₂)) additionally comprises a milling stage of said crushed deoiled germ residue with a stone mill (5).

33. The process according to any of the claims 3 to 32, wherein said mixing stage, (step c)), comprises a stage of the selection of the product obtained from the combination of the meal, according to claim 32, with the deoiled wastes, according to claim 24, in a plansifter (6), in order to give a germ flour.

34. The process according to claim 33 wherein, in said mixing stage, the deoiled wastes, according to claim 24, are combined with the meal, according to claim 32, in a quantity between 1% and 6% by weight, preferably in a quantity of about 3% by weight, in order to give the germ

flour.

35. The process according to any of the claims 3 to 34 wherein the mixing stage, (step c)), comprises a pre-mixing stage of the germ flour with the germ oil enriched
5 flour in a proportion between 1:1 and 5:1, preferably in a proportion of 2:1.

36. The process according to any of the claims 3 to 35 wherein said mixing stage, (step c)), comprises an additional mixing stage of said flour, obtained according
10 to claim 35, with cereal flour in a quantity between 1% and 6% by weight, preferably in a quantity of about 1.5% by weight.

37. The process according to any of the claims 1 to 36, wherein said cereals are selected from soft wheat, hard
15 wheat, rice, maize, barley, oats, rye, millet, sorghum and/or mixtures thereof.

38. A flour obtainable with the process according to any of the claims 1 to 37.

39. The flour according to claim 38 which is a wheatgerm
20 enriched wheat flour.

40. The flour according to claims 38 or 39 which is a type 0, 00, 1, 2, wholemeal soft wheat flour enriched with wheatgerm.

41. Oven-baked products obtainable with the flour
25 according to any of the claims 38 to 40.